



**CALIFORNIA STATE SCIENCE FAIR  
2013 PROJECT SUMMARY**

<b>Name(s)</b> <b>Cory Hard; Michael Rincon</b>	<b>Project Number</b> <b>S1596</b>
<b>Project Title</b> <b>Biocontrol of Candidas albicans via Extracellular Chitinase</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> We hypothesized that the extracellular chitinase would be an effective antifungal agent against C. Albicans</p> <p><b>Methods/Materials</b> Materials: S. Marcescens (C. Biological), Petri Dishes, C. Albicans (C. Biological), Inoculating Loop, LB base, Fume Hood, Cornmeal base, Incubator, Fluconazole (2mg/ml), Shaker Plate, (NH<sub>4</sub>)<sub>2</sub>SO<sub>4</sub>, 75% saturated, Autoclave, .5 McFarland Standard, DI H<sub>2</sub>O, P20 and P1000, Microwave, 75% Ethanol, Centifuge, Critrate, Phosphate Buffer (pH 5.8), Analytical and Tabletop scales</p> <p>Methods: Preparation for 200 ml LB agar, Pouring plates, Inoculation of S. Marcescens onto the LB agar plates, Starting a Liquid Growth Culture, Extracting the Supernatant, Producing Chitinase Crude Extract, Growing Candidas Albicans, KB Disk Diffusion Test</p> <p><b>Results</b> Our hypothesis was somewhat correct. At 48 hrs our Chitinase C.E. had the highest Zone of Inhibition, same as our Fluconazol, which was our standard. Though, the S. Marcescens Supernatant had the highest Average Zone of inhibition at 48 hrs.</p> <p><b>Conclusions/Discussion</b> Discussion: Our hypothesis was somewhat correct; the S. Marcescens supernatant was very effective against C. Albicans, creating clear zones of inhibition almost every trial. Alternatively, the chitinase crude extract was not effective as often, but did have some large zones of inhibition. Compared to the fluconazole, the S. Marcescens supernatant was a better antifungal agent against C. Albicans. The crude extract of chitinase didn't have a high average ZOI, but it did show potential with its 12 mm ZOI.</p> <p>Conclusion: This experiment showed that the supernatant of Serratia Marcescens does contain an antifungal agent equal to, if not better, than fluconazole.</p>	
<b>Summary Statement</b> Our project was designed to see if Extracellular Chitinase would be an effective antifungal agent.	
<b>Help Received</b> Dr. Malhotra let us use her classroom and equipment at Thousand Oaks High School, she also helped us get access to the chemicals we needed.	